The Blue Gold: Experiences in Water Recycling

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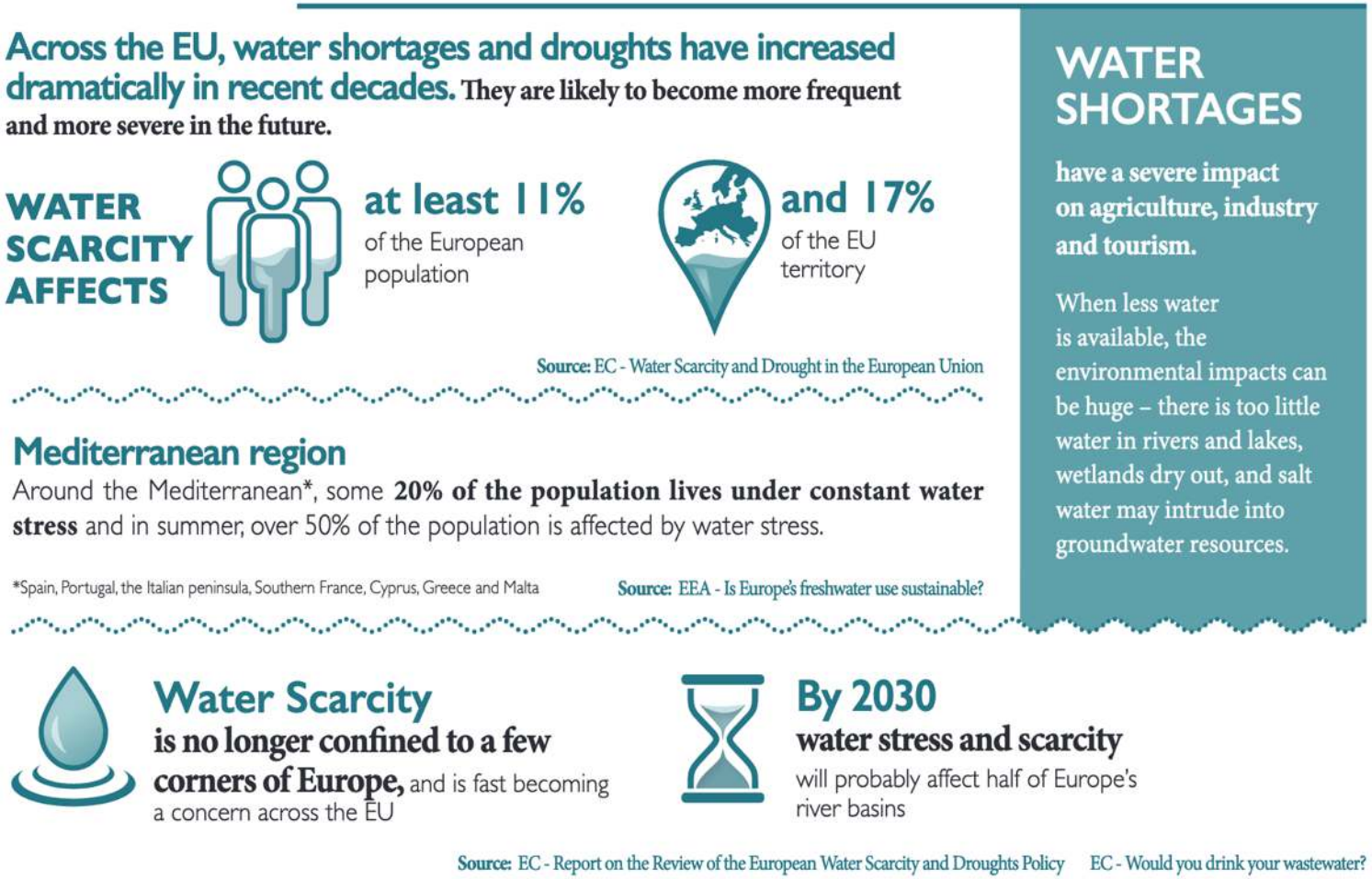
New trends


European Commission
Water is too precious to waste
WATER IS A FINITE PRECIOUS RESOURCE
Although 72% of the Earth's surface is covered with water, less than 3% of this water is suitable for uses like drinking and irrigation.
Source : Live Science

Water shortage



Conclusions for the industry

- Risen public awareness for all water topics
- The significance for water-treatment and water-reuse will further increase
- Legislation dealing with this topics are to be expected sooner or later!

Water jetting industry will have to deal with these challanges!

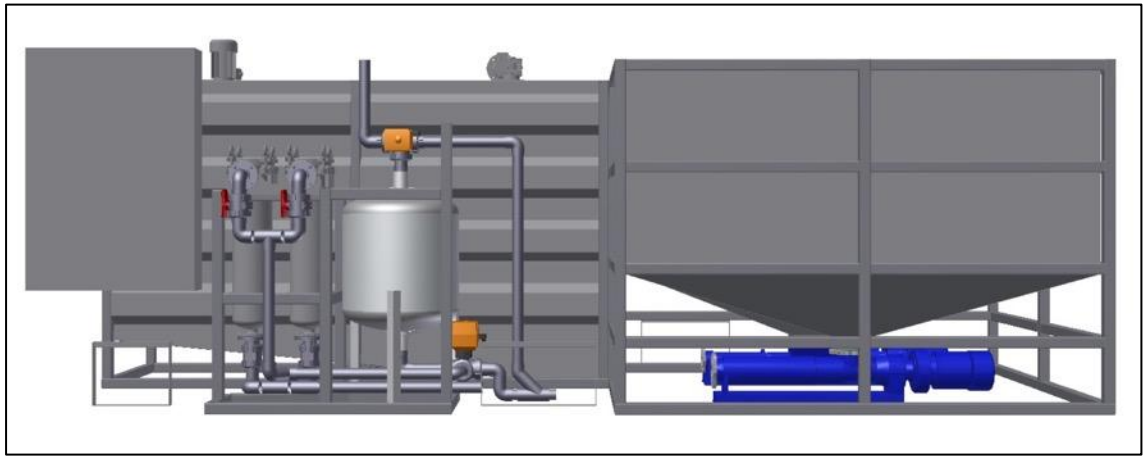
Our Solution for the industry

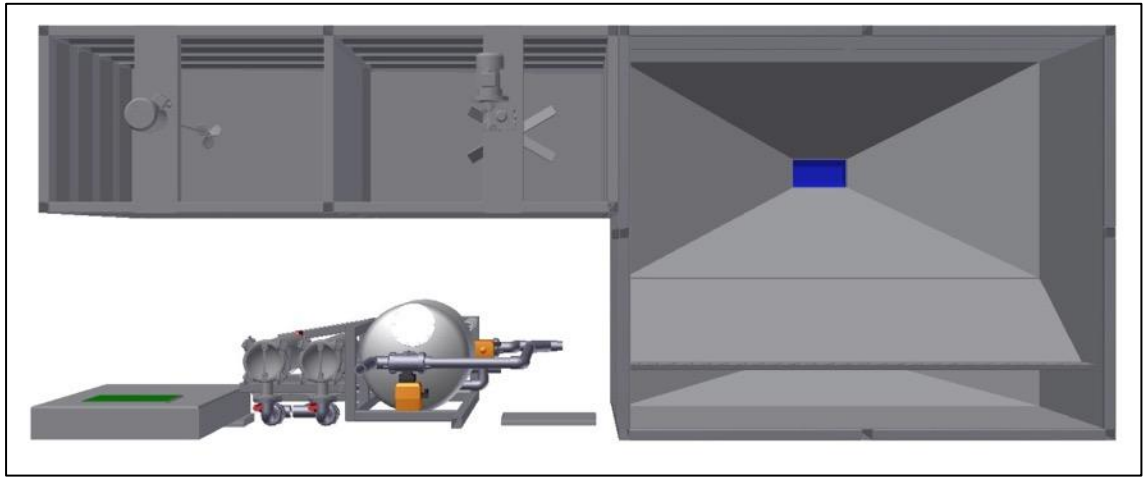
- Mobile wastewater treatment plant for recycling the process water from high-pressure water jetting

Technology

1. Reactor tank
2. Flocculation unit
3. Lamella seperator
4. Storage tank
5. Sludge discharge
6. Fine filtration units
7. Fully automatic control
8. Recording pH-value

Technology





Industrial Applications

reprotex
The Water Recycler

CONSTRUCTION

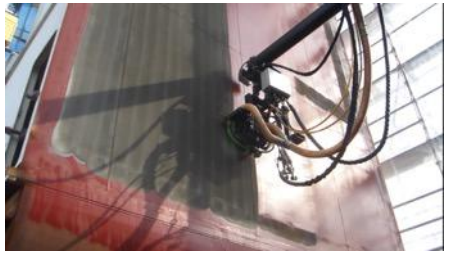
- Hydrodemolition and coating removal
- Tunnel cleaning and refurbishment

SHIPYARDS

- Ship hull preparation

INDUSTRY

- Tank refurbishment

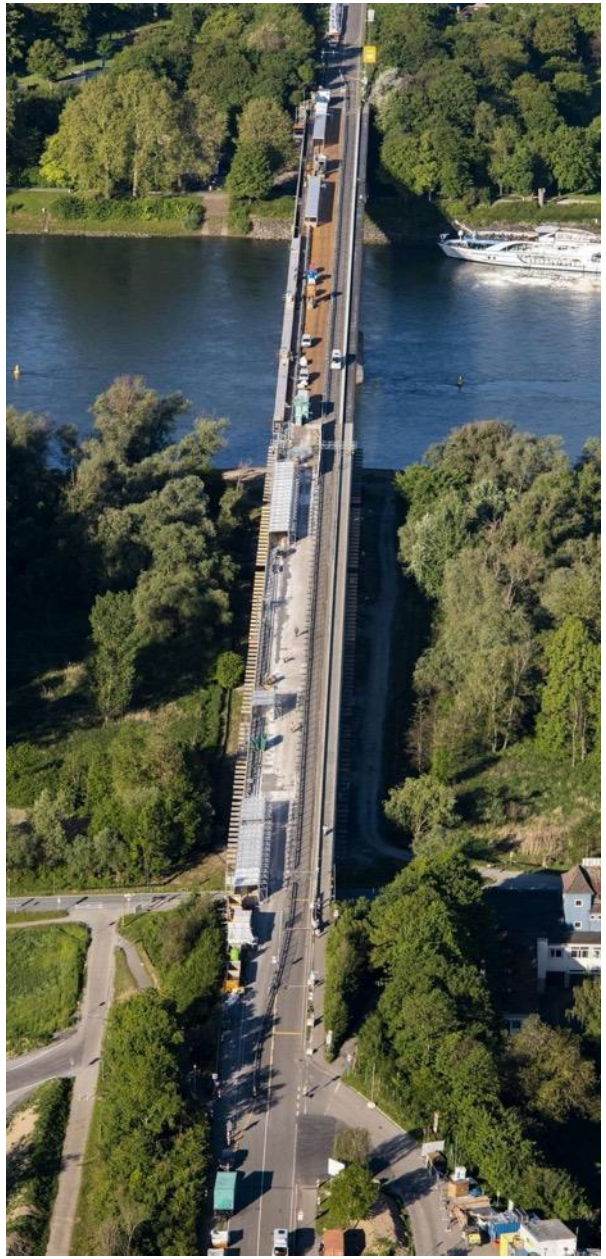


Construction Industry

Hydrodemolition

- Concrete removal in Luxembourg
- Client: THP France
- Aquacutter (2.200 bar, 200 l/min) wastewater treated for drain into the sewage system

Business Case Speyer



Bridge refurbishment with PCB/PAK contamination

Chronology

The Salier Bridge is an important road bridge crossing the river Rhine, which connects the federal states of Baden-Württemberg with Rhineland-Palatinate at Speyer. The structure consists of a steel beam bridge in the river area and a prestressed concrete beam bridge in the eastern foreland. The bridge has a total length of 595 m and has two lanes as well as a pedestrian/cycling path on both sides.

Robots in conjunction with water jetting (technology by Hammelmann) are used to remove the pavement layers and prepare the concrete foundations.

Business Case Speyer

Bridge refurbishment with PCB/PAK contamination

First material samples showed a **strong contamination of PCB** (concrete) and **PAH** (asphalt). As a consequence Reprotex was contacted to carry out a pilot test to treat the jet water. The convincing analysis results led to an order to use Reprotex technology for the rehabilitation of the bridge. The expected amount of waste water is about 8,000m³.The treated water achieves a unparalleled quality outreaching legal requirements so that it can even be discharged into the Rhine. Compliance with the regulatory limit values is being checked twice a week by an accredited laboratory.

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Bridge refurbishment with PCB/PAK contamination

demolition robots

wastewater catchment

wastewater

Business Case Speyer

Bridge refurbishment with PCB/PAK contamination

For separating PCP the REPROTEX unit was combined with an activated carbon filter system

Business Case Speyer

Bridge refurbishment with PCB/PAK contamination

treated water

Injection point into riverRhein

sludge dewatering

Business Case Speyer

Bridge refurbishment with PCB/PAK contamination

Parameter		Wastewater Concrete	Clear water before AC filter	Clear water after AC filter	Wastewater Asphalt	Clear water before AC filter	Clear water after AC filter
pH-value	-	12,3	8,3	9,0	8,2	8,3	8,9
Conductivity	µS/cm	2.460	520	555	530	565	478
Filterable substances	mg/l	10.100	3	< 2	787	< 2	< 2
Nitrogen total	mg/l	0,05	0,06	< LOD	0,04	0,03	0,22
Sulfate	mg/l	7,2	26	34	7,7	13	30
Phosphate	mg/l	2,3	< 1,5	< 1,5	2,2	< 1,5	< 1,5
COD	mg/l	334	51	< 15	148	43	< 15
Phenol index	mg/l	0,19	0,34	< 0,050	5,2	3,3	< 0,050
Sum 16 EPA-**PAH**	µg/l	27,8	1,69	0,08	1.190	92,6	0,06
Sum 7 **PCB**	µg/l	480	0,02	< LOD	< LOD	< LOD	< LOD

LOD ... Limit of determination

Business Case Speyer

Bridge refurbishment with PCB/PAK contamination

Cost comparison:

Project duration		2 years
Wastewater		8.000 m³

Conventional	Tours á 10m³	800
	Time 3h á 150€	360.000 €
	Disposal 30€/m³	240.000 €
		600.000 €

Mobile Wastewater Treatment	Depreciation MFD_R200	60.000 €
	Operating materials 3€/m³	24.000 €
	Staff (partial)	48.000 €
	CO_2 (pH neutralization)	10.000 €
	Activated carbon filter	10.000 €
	Sludge disposal 1% á 350€/m³	28.000 €
		180.000 €

Tank cap refurbishment

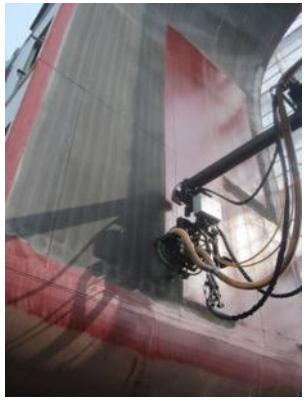
Removal of coating

- Coating removal from the cap of a petrol tank
- Client: Industriewartung Becker GmbH
- 2x Surface blaster (2.500 bar, 40 l/min) and hand lance (2.500 bar, 22 l/min)
- 350m³ treated wastewater for reuse in working process

Surface preparation

Maritime industry/shipyards:

- Ship hull surface preparation at Blohm & Voss shipyard
- Project partners: Hubert Palfinger Technologies / VTA
- HTC High tech carrier (2.800 bar, 60 l/min)
- Clear water quality ready for recycling or discharge



Satisfied Customers

Water is life!

Don’t waste it, reuse it!

¡Thank you!

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Business Development

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